

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

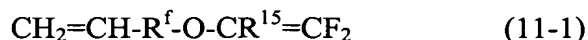
1. (Currently Amended) A pellicle for a photolithographic patterning process ~~by means of using~~ a light having a wavelength of from 100 to 200 nm, said pellicle comprising:
~~which has a pellicle membrane made of~~ comprising the following fluoropolymer (A):
~~Fluoropolymer (A):~~ a substantially linear fluoropolymer which has an alicyclic structure in its main chain, the main chain being a chain of carbon atoms, and ~~which satisfies said~~
fluoropolymer satisfying the following requirements (1) and (2):

(1) the carbon atoms in the main chain of said fluoropolymer comprise a carbon atom having at least one hydrogen atom bonded thereto and a carbon atom having no hydrogen atom bonded thereto; and

(2) in the measurement of ~~its~~ a high resolution proton magnetic resonance spectrum of said fluoropolymer, ~~the~~ a number of hydrogen atoms based on signals appearing on ~~the~~ a ~~higher~~ magnetic field side higher than 2.8 ppm, is at most 6 mol% based on ~~the~~ a total number of hydrogen atoms.

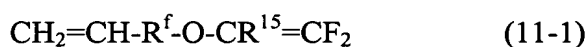
2. (Currently Amended) The pellicle according to Claim 1, wherein the fluoropolymer (A) ~~is a fluoropolymer which~~ has substantially no signals appearing on the ~~higher~~ magnetic field side higher than 2.8 ppm in the measurement of ~~its~~ the high resolution proton magnetic resonance spectrum.

3. (Original) The pellicle according to Claim 1, wherein the fluoropolymer (A) contains monomer units formed by cyclopolymerization of a diene monomer represented by the following formula (11-1):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

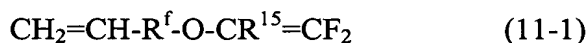
4. (Original) The pellicle according to Claim 2, wherein the fluoropolymer (A) contains monomer units formed by cyclopolymerization of a diene monomer represented by the following formula (11-1):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

5. (Currently Amended) The pellicle according to Claim 1, wherein the fluoropolymer (A) is ~~a fluoropolymer~~ obtained by cyclopolymerization of a diene monomer represented by the following formula (11-1), or ~~a fluoropolymer obtained~~

by copolymerizing a diene monomer represented by the following formula (11-1) with at least one monoene monomer having no or one hydrogen atom-bonded carbon atom, as a carbon atom of a polymerizable unsaturated group, (provided that the polymerization of the diene monomer is a cyclic polymerization):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

6. (Currently Amended) The pellicle according to Claim 5, wherein the fluoropolymer (A) is ~~a fluoropolymer~~ obtained by carrying out the polymerization at a temperature of at most 15°C .

7. (Currently Amended) The pellicle according to Claim 1, wherein the fluoropolymer (A) is ~~a fluoropolymer (A)~~ obtained by fluorinating a fluoropolymer having the same structure as the fluoropolymer (A) except that it does not satisfy the requirement (2), to have some of hydrogen atoms bonded to carbon atoms substituted by fluorine atoms.

8. (Currently Amended) A pellicle for a photolithographic patterning process ~~by means of using~~ a light having a wavelength of from 100 to 200 nm, ~~which comprises said pellicle comprising:~~

a pellicle membrane,

a frame supporting the pellicle membrane, and

an adhesive bonding the pellicle membrane to the frame,

wherein the adhesive ~~is made of the following fluoropolymer~~ comprises (A):

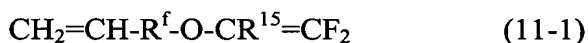
~~Fluoropolymer (A):~~ a substantially linear fluoropolymer which has an alicyclic structure in its main chain, the main chain being a chain of carbon atoms, and ~~which satisfies said fluoropolymer satisfying~~ the following requirements (1) and (2):

(1) the carbon atoms in the main chain of said fluoropolymer comprise a carbon atom having at least one hydrogen atom bonded thereto and a carbon atom having no hydrogen atom bonded thereto; and

(2) in the measurement of ~~its~~ a high resolution proton magnetic resonance spectrum of said fluoropolymer, ~~the~~ a number of hydrogen atoms based on signals appearing on ~~the~~ a ~~higher~~ magnetic field side higher than 2.8 ppm, is at most 6 mol% based on ~~the~~ a total number of hydrogen atoms.

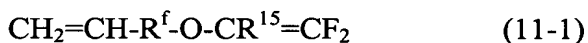
9. (Currently Amended) The pellicle according to Claim 8, wherein the fluoropolymer (A) ~~is a fluoropolymer which~~ has substantially no signals appearing on the ~~higher~~ magnetic field side higher than 2.8 ppm in the measurement of ~~its~~ the high resolution proton magnetic resonance spectrum.

10. (Original) The pellicle according to Claim 8, wherein the fluoropolymer (A) contains monomer units formed by cyclopolymerization of a diene monomer represented by the following formula (11-1):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

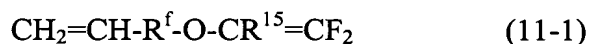
11. (Original) The pellicle according to Claim 9, wherein the fluoropolymer (A) contains monomer units formed by cyclopolymerization of a diene monomer represented by the following formula (11-1):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

12. (Currently Amended) The pellicle according to Claim 8, wherein the fluoropolymer (A) ~~is a fluoropolymer~~ obtained by cyclopolymerization of a diene monomer represented by the following formula (11-1), ~~or a fluoropolymer obtained~~ by copolymerizing a diene monomer represented by the following formula (11-1) with at least one monoene monomer having no or one hydrogen atom-bonded carbon atom,

as a carbon atom of a polymerizable unsaturated group, (provided that the polymerization of the diene monomer is a cyclic polymerization):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

13. (Currently Amended) The pellicle according to Claim 12, wherein the fluoropolymer (A) is ~~a fluoropolymer~~ obtained by carrying out the polymerization at a temperature of at most 15°C.

14. (Currently Amended) The pellicle according to Claim 8, wherein the fluoropolymer (A) is ~~a fluoropolymer (A)~~ obtained by fluorinating a fluoropolymer having the same structure as the fluoropolymer (A) except that it does not satisfy the requirement (2), to have some of hydrogen atoms bonded to carbon atoms substituted by fluorine atoms.

15. (Currently Amended) A pellicle for a photolithographic patterning process ~~by means of using~~ a light having a wavelength of from 100 to 200 nm, ~~which comprises said pellicle comprising:~~

a pellicle membrane,

a frame supporting the pellicle membrane, and

an adhesive bonding the pellicle membrane to the frame,

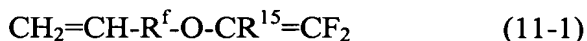
wherein the pellicle membrane and the adhesive ~~are made of~~ comprise the following fluoropolymer (A): ~~Fluoropolymer (A):~~ a substantially linear fluoropolymer which has an alicyclic structure in its main chain, the main chain being a chain of carbon atoms, and ~~which satisfies said fluoropolymer satisfying~~ the following requirements (1) and (2):

(1) the carbon atoms in the main chain of said fluoropolymer comprise a carbon atom having at least one hydrogen atom bonded thereto and a carbon atom having no hydrogen atom bonded thereto; and

(2) in the measurement of ~~its~~ a high resolution proton magnetic resonance spectrum of said fluoropolymer, ~~the~~ a number of hydrogen atoms based on signals appearing on ~~the~~ a higher magnetic field side higher than 2.8 ppm, is at most 6 mol% based on ~~the~~ a total number of hydrogen atoms.

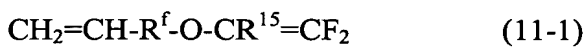
16. (Currently Amended) The pellicle according to Claim 15, wherein the fluoropolymer (A) ~~is a fluoropolymer which~~ has substantially no signals appearing on the higher magnetic field side than 2.8 ppm in the measurement of ~~its~~ the high resolution proton magnetic resonance spectrum.

17. (Original) The pellicle according to Claim 15, wherein the fluoropolymer (A) contains monomer units formed by cyclopolymerization of a diene monomer represented by the following formula (11-1):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

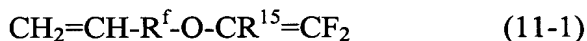
18. (Original) The pellicle according to Claim 16, wherein the fluoropolymer (A) contains monomer units formed by cyclopolymerization of a diene monomer represented by the following formula (11-1):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

19. (Currently Amended) The pellicle according to Claim 15, wherein the fluoropolymer (A) is ~~a fluoropolymer~~ obtained by cyclopolymerization of a diene monomer represented by the following formula (11-1), or ~~a fluoropolymer obtained~~

by copolymerizing a diene monomer represented by the following formula (11-1) with at least one monoene monomer having no or one hydrogen atom-bonded carbon atom, as a carbon atom of a polymerizable unsaturated group, (provided that the polymerization of the diene monomer is a cyclic polymerization):



wherein R^{15} is a fluorine atom or a trifluoromethyl group, and R^f is a C_{1-4} perfluoroalkylene group.

20. (Currently Amended) The pellicle according to Claim 19, wherein the fluoropolymer (A) is ~~a fluoropolymer~~ obtained by carrying out the polymerization at a temperature of at most 15°C.

21. (Currently Amended) The pellicle according to Claim 15, wherein the fluoropolymer (A) is ~~a fluoropolymer (A)~~ obtained by fluorinating a fluoropolymer having the same structure as the fluoropolymer (A) except that it does not satisfy the requirement (2), to have some of hydrogen atoms bonded to carbon atoms substituted by fluorine atoms.

Application No.: 10/634,877

Reply to the Office Action dated: July 22, 2004

BASIS FOR THE AMENDMENT

The claims have been amended to better conform to accepted U.S. claim format.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1-21 will now be active in this application.

INTERVIEW SUMMARY

Applicants wish to thank Examiner Zacharia for the helpful and courteous discussion with Applicants' Representative on October 18, 2004. During this discussion it was noted that Example 6 of Matsukura et al uses fluoropolymer (A) prepared according to Example 1 of Matsukura et al. Applicants presented data showing that the fluoropolymer (A) of Matsukura et al is outside the scope of the claimed pellicle because fluoropolymer (A) of the reference does not satisfy requirement (2) of the fluoropolymer of Claims 1, 8, and 15.